11 LANDSCAPE AND SEASCAPE VISUAL IMPACT ASSESSMENT

11.1 INTRODUCTION

This section presents a summary of the Landscape and Visual Impact Assessment (LVIA) of the proposed Demonstrator Project. The full LVIA report, with tables, maps, wireline diagrams and photomontages, is presented in Appendix 4.

The LVIA includes:

- *an assessment of the existing landscape and visual resource, and the effects of the proposed development on them*
- *an assessment of the existing seascape and visual resource, and the effects of the proposed development on them*
- *an assessment of cumulative effects with other onshore wind farm developments*
- *an assessment of sequential impacts assessment along specific routes.*

11.2 ASSESSMENT METHODOLOGY

11.2.1 SOURCES OF INFORMATION, GUIDANCE DOCUMENTS AND POLICY CONTEXT

The visual impact assessment for the Beatrice Demonstrator Project was undertaken with reference to a wide range of documentation and sources of information relating to policy and planning advice, legislation, guidance on methods for assessing both landscape and seascape visual impacts, and background material on the region (Table 11.1).

With the continuing development of onshore wind farms, and new initiatives to develop offshore wind farms, further work is in hand to provide guidance and best-practice advice to developers on how to plan and undertake assessment of visual impacts. Some of these studies will provide further advice and guidelines that may be particularly applicable to the development of offshore wind farms located close to the coast, where there is the potential for effects on both the landscape and seascape, and cumulative effects between the offshore wind farm and existing or planned onshore wind farms.

One such study "Guidance on the assessment of the impact of offshore wind farms: seascape and visual impact report", by the DTI in association with the Countryside Agency, the Countryside Council for Wales and Scottish Natural Heritage, was published in November 2005, after the LVIA for the Beatrice Demonstrator was completed. Although this study was not available to be utilised in Talisman's assessment, given the wealth of existing material that has been drawn upon to complete this LVIA, and the experience of the landscape architects who undertook the work, Talisman believes that the methods, approach and assessment techniques used for the Demonstrator LVIA will be in broad agreement with any future developments in best practice that may be available later in 2006.

11.2.2 CONSULTATION

The Highland Council and Scottish Natural Heritage were consulted on the key issues to be addressed by the Environmental Impact Assessment in addition to recommended viewpoints for the Visual Impact Assessment.

11.2.3 DEFINITION OF STUDY AREA

The study area on which the LVIA and seascape assessment focuses, extends to a radius of 35km from the proposed development. This radius has been chosen on the basis of Good Practice Guidelines and in order to include all viewpoints from which significant visual effects (as defined by EIA Regulations) are most likely to occur.

Nevertheless, for the Demonstrator Project, it was acknowledged that there are certain conditions when the proposed WTGs may be clearly visible from beyond 35km. This is mainly because of the isolation of the WTGs in contrast to open suroundings and the high clarity of visibility that can occur when looking over the sea during exceptional weather conditions, especially in a northwards direction when the sun is at a low angle from behind. For these reasons, visibility of the proposed development was considered beyond this radius, extending to approximately 65km from the centre of the site. This is to confirm that significant visual impacts will not occur at these far distances.

Table 11.1 Sources of information used for the LVIA and Seascape assessment

LEGISLATION AND POLICY

- The Highland Structure Plan, The Highland Council, 2001
- The Moray Structure Plan, 1999
- The Moray Local Plan, 2000
- The Caithness Local Plan, 2002
- The South and East Sutherland Local Plan, 2000
- 'National Planning Policy Guideline (NPPG 6): Renewable Energy', The Scottish Office Environment Department, Revised 2000
- 'National Planning Policy Guideline (NPPG 14): Natural Heritage', The Scottish Office Development Department,1999
- SNH Policy Statement 04/01, Marine renewable energy and the natural heritage – an overview and policy statement

GUIDANCE AND ADVICE

- 'Guidance for Landscape and Visual Impact Assessment', The Landscape Institute and the Institute of Environmental Assessment second edition 2002
- 'Guide to Best Practice in Seascape Assessment', The Countryside Council for Wales, Brady Shipman Martin and University College Dublin, 2001
- 'Landscape Character Assessment for England and Scotland', Scottish Natural Heritage (SNH) and The Countryside Agency, 2002
- 'Guidelines on the Environmental Impacts of Wind Farms and Small Scale Hydroelectric Schemes', SNH, 2001
- 'Policy Statement No 02/03 – Wilderness in Scotland's Countryside', SNH, 2002
- 'Planning Advice Note (PAN 45) Renewable Energy Technologies', Scottish Office Environment Department, Revised 2002
- 'A Handbook on Environmental Impact Assessment', SNH, 2002
- 'University of Newcastle (2002) Visual assessment of wind farms: Best Practice', SNH Commissioned report F01AA303A, 2002
- A review of possible marine renewable energy development projects and their natural heritage impacts from a Scottish perspective, SNH commissioned report F02AA414, 2003
- Visual and landscape effect of WTG units: The CCW Contract Science Report No. 631 'Studies to inform advice on offshore renewable energy developments: visual perception versus photomontage', Symonds Group Ltd

BACKGROUND

- Caithness and Sutherland Landscape Character Assessment, SNH 1998
- Ross and Cromarty Landscape Character Assessment, SNH 1999
- Inverness District Landscape Character Assessment, SNH 1999
- Inner Moray Firth Landscape Character Assessment, SNH 1997
- OS 1: 50,000 map sheets 11, 12, 17, 21, 26, 27 and 28
- 'Scotland's Scenic Heritage', Countryside Commission for Scotland, 1978
- 'Inventory of Gardens and Designed Landscapes – Volume 3': Highland, Orkney and Grampian Countryside Commission for Scotland and Historic Scotland, 1987
- 'An Inventory of Gardens and Designed Landscapes – Supplementary Volume 2': Highlands and Islands, SNH and Scotland and Historic Scotland, 1998

11.2.4 METHODS USED FOR LVIA

The methodology employed is based on the 'Guidelines for Landscape and Visual Assessment' (Second Edition), produced by the Landscape Institute and Institute of Environmental Management and Assessment (2002). It has had to be modified, however, to incorporate elements of seascape assessment as recommended within the Guide to Best Practice in Seascape Assessment, produced by the Countryside Council for Wales, Brady Shipman Martin and University College Dublin (2001), in addition to other guidance as listed within Table 11.1.

Seascape assessment is concerned with the interaction of the sea, coast and land and how a proposed development relates to this combination. For some projects this includes an element of assessment from the sea to the land. However, this tends to be for schemes where the turbines will be close to the coast and/or commonly seen from the open sea looking towards the land; for example where there is a key ferry route passing by the outside of the turbines. Neither of these scenarios apply to the proposed Beatrice Demonstrator Project, and it was judged that there would be insufficient distinction of seascape units from distances offshore at which the proposed Beatrice WTGs would have significant seascape and visual impacts. The seascape assessment for the Demonstrator Project is therefore mainly concerned with how the WTGs will affect distinct character and views as experienced from land and coastal areas.

The initial stages of assessment defined the study area and identified landscape character, landscape designations and relevant government policy, to determine the general extent of visibility and to identify a representative range of potential viewpoints from which to carry out the Visual Impact Assessment (LVIA). These viewpoints are largely concentrated within publicly accessible areas along roads and public footpaths, in residential locations and in areas popular for outdoor recreation.

Maps showing Zones of Theoretical Visibility (ZTV) were generated to identify the potential extent of visibility of the WTGs over a 60km radius from the centre of the site. The ZTVs were modelled using a computer-based visibility analysis package compiled using Ordnance Survey Digital Terrain Model data at 10m interval resolution. This ZTV represents a "bare ground" scenario, based on landform only, and takes no account of the screening effects of local hills, urban areas, buildings, structures or vegetation.

The ZTVs identified a number of potential viewpoints that would represent the potential range of views to the WTGs that could have significant visual impacts. These were visited, photographed and assessed by a number of Chartered Landscape Architects between June 2005 and November 2005 in order to confirm the value of the viewpoints to the assessment process (for example whether they were truly representative of views in the area and whether the proposed development would actually be screened by local features). Some of these viewpoints also represent potential cumulative visual impacts of other wind farms proposed within the study area.

The provisional list of viewpoints was sent to Scottish Natural Heritage (SNH) and The Highland Council (Appendix 4). SNH and The Highland Council subsequently responded with subsequent recommendations, all of which were subject to further assessment and, where appropriate, additional figures were included.

The assessment of potential visual impacts from viewpoints was aided by the use of computer generated wireline images, illustrating the likely scale and positioning of the proposed WTGs and the position of the existing oil platforms. Photographs of the existing baseline conditions were also taken, using a 35mm single lens reflex (SLR) camera with a 50mm and/or 70mm lens.

The panoramic photographs from each viewpoint were formed by splicing together single frames. They, together with the wirelines and photomontages, must be viewed at a specific viewing distance (indicated upon each sheet) and image size (as noted upon the sheets and as printed within the ES) in order to obtain an accurate representation of the scale of elements within the photograph. The turbine blades have been shown facing the same direction and, in some instances, colour balancing has occurred to make the image appear more realistic.

It should be noted that wireline images are not intended to represent the actual appearance of the proposed Demonstrator WTGs, but have been used as a tool to aid prediction of the likely scale, form and positioning of WTGs in comparison with the existing view seen on site.

Photomontages were produced for some of the viewpoints in addition to wireline images. The LVIA was based on a prediction of impacts, based upon views on-site in combination with the wireline images only. In addition, however, photomontages are produced to inform others impression of the likely images of the proposed WTGs (as it would be seen within photographs). The choice of viewpoints to be illustrated using photomontages is determined by whether the proposed WTGs would be able to be clearly shown upon a photomontage and a prediction of likely significant visual effect. Conventionally this means that photomontages are not usually produced for viewpoints over 15km away, due to the technical difficulty of representing wind turbines in photos over this distance (either existing or montaged). For this project photomontages were required to cover a greater distance, because the proposed development is located approximately 22km from the shore.

11.2.5 ASSESSMENT PROCESS, CRITERIA AND DEFINITIONS

The aim of this assessment is to identify, predict and evaluate potential key impacts on particular elements of the environment: effects on the landscape, seascape and visual resource of the study area; and the resulting overall significance of these effects arising from the proposed WTGs.

Throughout this Section, the term "landscape" is used to include elements of both the landscape and seascape – considering inland areas, the coastal edge, and marine areas and how these combine together.

Landscape resource is defined here as: "The combination and distribution of physical components that contribute to landscape context and character and how this is experienced and valued."

Visual resource is defined here as: "The quality of a particular area or view in terms of its visual components that create a visual setting."

Assessment of sensitivity of existing baseline conditions and prediction of magnitude of change leads to assessment of residual landscape and visual impacts on particular elements and the overall landscape and visual effects on the study area. The significance of these impacts and effects can be defined.

In order to provide a level of consistency to the assessment, these assessments have been based on pre-defined criteria described fully in Appendix 3.

11.2.6 ASSESSING SIGNIFICANCE

The significance of impacts and effects was judged using two principal criteria – the magnitude of the change and the sensitivity of the location or person affected by the change (receptors). Measures of significance must, however, be defined in relation to the specific circumstances of an individual development and landscape.

To determine the significance of the development on landscape resource, the following factors were considered (The Landscape Institute and Institute of Environmental Management and Assessment 2002):

- *the sensitivity of the landscape to the type of change proposed*
- *the nature of the effect (i.e. whether the key characteristics of the existing landscape resource of the study area, and their consistency throughout that area, are reinforced or weakened as a result of the changes in landscape character brought about by the introduction of the proposed development)*

- *the quality of the landscape characteristics affected and the potential for enhancement*
- *the value of landscape elements, feature or characteristics and the recognition of this by designation at various levels, such as local, regional, national and international and the affect of the change on the integrity of the designated area*
- *the magnitude of the effect and whether the change would be positive, adverse, temporary or permanent*
- *the type and rate of other changes that are likely to occur in the landscape resource of the study area in the future.*

To determine the significance of the development on the visual resource, the following factors are considered:

- *the nature of the effect (i.e. whether the scenic qualities of the view are strengthened or weakened as a result of the changes to visual amenity brought about by the introduction of the proposed development)*
- *the magnitude of the effect*
- *the sensitivity of the visual resource and receptors*
- *the number of people affected by the change (although changes affecting large number of people are generally more significant, this is not necessarily the case in sensitive landscape, for example areas of wild land)*
- *the type and rate of other changes that are likely to occur on the visual amenity of the study area in the future.*

For individual impacts, significance is measured in a scale of 'none', 'negligible', 'slight', 'moderate', and 'substantial'. For the overall landscape effect and visual effect of the proposed development within the study area, a determination is made as to whether the likely affect would be 'significant' or 'not significant'.

Wherever possible, identified effects are quantified, but the nature of landscape and visual assessment requires interpretation informed by professional judgement.

11.2.7 SEQUENTIAL IMPACTS

Sequential impacts occur when the observer moves along a linear route, as a series or continuum of points. Views from these routes may include other developments.

11.2.8 CUMULATIVE LANDSCAPE AND VISUAL IMPACTS

An assessment of the cumulative landscape and visual impacts of other wind farms in addition to the proposed WTGs has been undertaken. This considers changes that result in conjunction with other existing or reasonably foreseeable proposals. The scope of this assessment was discussed with SNH and The Highland Council.

All existing planning or Section 36 applications and consents for wind farms and single wind turbines within the study area that were identified before October 2005 as having potential significant cumulative impacts have been included in the Cumulative Landscape and Visual Impact Assessment (Table 11.2).

Table 11.2 Wind farms considered by the cumulative assessment in addition to the Demonstrator Project.

Wind farm	No of wind turbines	Distance from Beatrice (centre to centre) (km)	Status
Causeymire	24 (21 current)	30	Existing
Buolfruich	16	23	In Construction
Dunbeath	23	30	Submitted
Gordonbush	35	50	Submitted
Kilbraur	19	58	Submitted

As Causeymire and Buolfruich wind farms already exist, seven cumulative scenarios were considered by this study as follows:

1 The proposed Dunbeath wind farm plus the Beatrice Demonstrator Project (including the existing Causeymire and Buolfruich wind farms);

2 The proposed Kilbraur wind farm plus the Beatrice Demonstrator Project (including the existing Causeymire and Buolfruich wind farms);

3 The proposed Gordonbush wind farm plus the Beatrice Demonstrator Project (including the existing Causeymire and Buolfruich wind farms);

4 The proposed Dunbeath and Kilbraur wind farms plus the Beatrice Demonstrator Project (including the existing Causeymire and Buolfruich wind farms);

5 The proposed Dunbeath and Gordonbush wind farms the Beatrice Demonstrator Project (including the existing Causeymire and Buolfruich wind farms);

6 The proposed Dunbeath, Gordonbush and Kilbraur wind farms plus the Beatrice Demonstrator Project (including the existing Causeymire and Buolfruich wind farms); and

7 The proposed Gordonbush and Kilbraur wind farms plus the Beatrice Demonstrator Project (including the existing Causeymire and Buolfruich wind farms).

11.3 SUMMARY OF RESULTS

11.3.1 THE PROPOSED BEATRICE DEMONSTRATOR WIND TURBINE GENERATORS

The proposed WTGs have been sited according to two major factors as follows:

- *the presence of existing oil and gas infrastructure on the seabed around Beatrice*
- *the topography and depth of the seabed.*

No adjustments to the proposed siting were recommended on landscape and visual grounds. This was for two reasons: firstly it was provisionally assessed that the proposed WTGs were sited in an arrangement that related well to the surrounding land and seascape resource; and, secondly, no scope for amendment was considered feasible on account of technical and practical factors.

The proposed design for the Demonstrator WTGs was selected for its technical specification and energy output. Once again, no adjustments to this were recommended on landscape and visual grounds for the same reasons as described above with regards to siting.

11.3.2 LANDSCAPE IMPACTS OF THE DEMONSTRATOR WIND TURBINE GENERATORS

Various combinations of landscape character types as identified within the Caithness and Sutherland Landscape Character Assessment (SNH, 1998) were divided into five separate local landscape character areas. Generally, the proposed WTGs would relate strongly to many of the key characteristics of these landscape areas, specifically their large scale, sense of exposure, existing patchy composition of features and existing presence of human-made elements. Most importantly, the WTGs at the Demonstrator site would seem closely associated with the existing oil platforms – appearing to complement the energy generation function and focal qualities of these features.

For all local landscape areas, landscape impacts were judged to be of low magnitude. On account of the mainly low sensitivity of these areas, most of the impacts identified were judged as being of slight significance, with moderate significance only occurring within the "Interior hills" area, reflecting its medium sensitivity. No substantial adverse impacts were identified.

11.3.3 VISUAL IMPACTS OF THE DEMONSTRATOR WIND TURBINE GENERATORS

From most viewpoints the proposed development would be seen as a single cohesive feature within the landscape, of similar prominence to existing foci within the onshore landscape such as telecom masts and distinctive low hills, as well as the existing oil platforms seen offshore. Given its distance from the coast, it would appear clearly separated from the onshore landscape and part of the open sea, and the movement of wind turbine blades would rarely be discernible from the mainland. In addition, although the vertical line of the WTGs would contrast to the existing platforms and the surrounding horizontal emphasis of the sea, this disparity would appear as a "clean" contrast of line and form on account of the simple composition of elements.

The proposed WTGs would appear most prominent from those coastal areas that have a simple foreground pattern, and thus fewer distracting features, especially when such views are directed towards the proposed development. Visibility would mainly occur from southern directions and at high elevations.

Although 11 viewpoints have been assessed as part of the LVIA process, five were chosen mainly to illustrate the nature of visibility rather than for predicted significant visual impacts, as they are located outside the 35km study area. For all the viewpoints, impacts were judged to be of only negligible or low magnitude of visual impact, strongly affected by the fact that all the viewpoints are over 25km from the proposed development (which itself is 22km from the coast). These viewpoints are all of only low or medium sensitivity to the type of development being proposed, mainly reflecting their location within open areas that contain many other built elements. No substantial visual impacts were found.

11.3.4 SEQUENTIAL IMPACTS OF THE DEMONSTRATOR WIND TURBINE GENERATORS

The potential sequential impacts of the WTGs when viewed in either direction along two routes were assessed. Generally, however, because of the distance of the proposed development, as previously discussed, most of the views from these routes would result in no or negligible impact, although low magnitude of impacts would occur along some sections. This would result in none, negligible or slight significance of impacts along all sections of the roads apart from one section travelling south between Wick and Latheron and one section travelling north between Navidale and Dunbeath. From these sections, which equate to 51km of a total sequential assessment of 313km, there would be moderate sequential visual impacts. No substantial sequential impacts were found.

11.3.5 IMPACTS OF THE DEMONSTRATOR WIND TURBINE GENERATORS ON AREAS OF LANDSCAPE AND SCENIC VALUE

The proposed development would have low or negligible magnitude of impact on areas of recognised landscape and scenic value. It would have no significant impact on any NSA. However, it would result in moderate adverse impacts on one proposed AGLV and two Garden and Designed Landscapes, which reflects their medium sensitivity. No substantial significant impacts have been identified on areas of landscape and scenic value.

11.3.6 CUMULATIVE LANDSCAPE AND VISUAL IMPACTS OF THE DEMONSTRATOR WIND TURBINE GENERATORS WITH OTHER WIND FARMS

Consideration of cumulative impacts of the proposed Demonstrator WTGs with the existing Causeymire and Buolfruich wind farms formed part of the baseline conditions. The cumulative LVIA also considered the combined landscape and visual impacts of the Demonstrator WTGs with the proposed Dunbeath, Kilbraur and Gordonbush wind farms.

Generally, the Demonstrator WTGs would appear as a separate isolated feature from these wind farms, seen within a different setting and when looking in a different direction from key viewpoints, e.g. Scaraben. In this way, they would seem more closely associated with the existing offshore oil platforms than other wind farms within the vicinity of viewpoints. A few exceptions to this occur in places: firstly where existing and proposed wind farms would cumulatively dominate the landscape, and thus views to the Demonstrator WTGs at the edge of these areas could tentatively seem to increase its extent, almost as an outlier; and, secondly, where the existing and proposed WTGs are viewed from elevated locations as a loosely linked arc of developments and the Demonstrator WTGs would appear between two other developments, seeming to reinforce the linkage.

Within the local landscape character areas, only none, negligible or slight significance of impacts were identified; no moderate or substantial impacts were found. This is mainly because the proposed WTGs would largely seem to relate to the character of the surrounding land and seascape, particularly on account of their close association with the existing oil platforms.

For the 11 viewpoints, only none or negligible cumulative significance of impacts have been identified apart from one viewpoint, Scaraben, where moderate cumulative visual impacts could result if both the proposed Gordonbush and Dunbeath wind farms were developed in addition to the existing Causeymire and Buolfruich wind farms.

For the sequential impacts along the two routes assessed in both directions, the cumulative LVIA found that mainly none or negligible cumulative impacts would occur. The only exceptions would be: a slight significance of cumulative landscape impacts when travelling from Navidale to Dunbeath and Wick to Latheron if the proposed Dunbeath and Kilbraur wind farms were built; a slight significance of cumulative visual impact between Latheron and Dunbeath if the proposed Dunbeath wind farm was built; and a moderate significance of visual impact between Navidale and Dunbeath if the proposed Dunbeath wind farm was built.

11.3.7 OVERALL EFFECT OF THE DEMONSTRATOR WIND TURBINE GENERATORS

The LVIA has established that the proposed Demonstrator Project at Beatrice would change the landscape and visual baseline conditions during its construction and operational phases. The proposed WTGs would introduce two new elements into the landscape and seascape. The construction phase would be relatively short (Section 3), and would have only temporary adverse effects on the landscape and visual resource of the study area.

The design of the Demonstrator WTGs has been mainly determined by technical and practical factors. The resulting design would appear concentrated from all viewpoints, forming a simple feature that would seem to relate to the character of the surrounding landscape and seascape and the existing oil platforms. In this way, the proposed WTGs would satisfy good practice guidance.

The application site is not subject to any statutory or local designations for landscape or scenic interest. The proposed Demonstrator Project would also not be visible from any major settlement.

Overall, during construction and operational phases, it was judged that direct impacts would have a slight adverse effect on the landscape resource. This is considered to be a non-significant effect.

Overall, during construction and operational phases, it was judged that direct impacts would have slight adverse effect on the visual resource. This is considered to be a non-significant effect.

11.3.8 OVERALL CUMULATIVE EFFECT OF DEMONSTRATOR WIND TURBINE GENERATORS

Assessment of the proposed Demonstrator WTGs in addition to the proposed Dunbeath, Kilbraur and Gordonbush wind farms identified that they would appear as a distinct feature within the landscape and seascape. Although the Demonstrator WTGs would seem to complement the function of the onshore developments, they would seem clearly separate from these within the wide open sea, more closely associated to the existing oil platforms than the nearest land mass.

Given the various effects described above, it was judged that direct cumulative impacts during construction and operational phases would have a negligible adverse effect on the landscape and visual resource. This is considered to be a non-significant effect.